Designing Built-ins

One architect's rules for successfully integrating cabinets, shelves, desks and counters into the rooms they serve

by Louis Mackall

We live in the age of stuff. As an architect who specializes in kitchens and other interiors, I get to restore some semblance of order. But early in my architectural practice, I grew frustrated by how far removed architects typically are from the materials and processes of building. I remember saying to friends that I felt like a guy shouting instructions to a couple on their first date. I was on the outside looking in, missing out on all the fun; that's why I became a cabinetmaker.

Before it's cut, a board is like a blank piece of paper, gently asking what I will make with it that would be more desirable than the board itself. As an architect, I find the voice of the board hard to hear. As a cabinetmaker, I have heard its simple question every time I approached the table saw.

In the following article, I'll explain an informal set of rules that I use to design everything from kitchen cabinets to built-in beds. Along the way, I'll illustrate these rules with photos of projects that I've designed.

Hardly your typical wall cabinet. A glass door with a sandblasted design and interior lights begins to set this cabinet apart. But note, too, how the cabinet combines with the arched valance over the window to create a soffit for recessed lights and an opportunity for display shelves.

Rule 1: Add to the room with its cabinetwork, don't take away.

Built-in cabinets should be just that—built in—not placed around the room like furniture. To rid myself of preconceptions, often the first thing I do is fill the room with foam.

I'm speaking metaphorically, of course. But as the foam sets up, my mind squirms under the inevitable "What now, fella?" After the foam is hard, I proceed to carve out the room, one eye on the list of things the clients have requested and the other eye on the spaces being created between them.

In the living room shown on the facing page, I needed to accommodate a variety of things: my client's pre-Columbian art collection; pockets for the heavy drapes and a valance for each of the exterior sliding doors; the mantelpiece; and extending all around the room, a clerestory with light behind frosted glass to extend the sense of space and to convey a feeling of warmth out to the edge of the room. Inside the room's framing, I established a secondary wall that defines the apparent limit of the room. The depth behind the wall varies. It is shallow for the curtains, but deeper for the cabinets. Openings through that wall create various niches, clearly subordinate to the room itself, minivistas to ancillary worlds. Done this way, the built-ins have become one element, and the room's stuff is an addition to the space of the room, not a subtraction from it.

By the way, ¾-in. medium-density fiberboard (MDF) is the ideal material for this kind of cabinetwork (the surface of the secondary wall, the ceiling beams, etc.). It's an inert flat stock that takes paint better than plywood and stays flatter as well. With a heavy coat of primer, its edge paints well. Unlike drywall, the MDF edge can stand by itself and doesn't require additional trim, which simplifies detailing and construction.

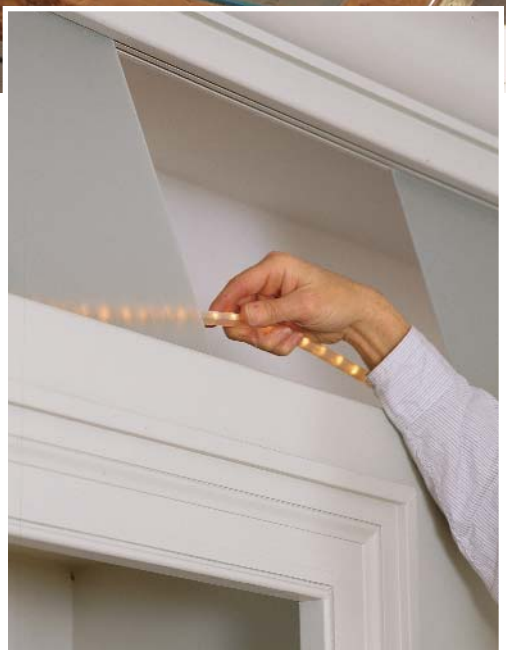
Rule 2: Where possible, light cabinets from inside.

The impact of upper cabinets is always much more significant than that of the lowers, and deserves more attention. Where possible, I use glass doors—either frosted or clear—for upper cabinets. The glass allows a brightness that a solid door does not. Glass also allows me to put lights inside the cabinets.

In the evening, with all the other lights off, the pockets of light from cabinet interiors create a pleasant warmth not unlike twilight, or the first, predawn rays of the sun. My "sunset" theory says that light coming from the side is much more enjoyable than light coming from the ceiling.

In the kitchen shown above, there is lighting around the inside edges of the upper cabinet-door openings, as well as around the opening

Recessed built-ins don't seem to rob space from the room. A secondary wall of MDF around this living room allows the display cases, cabinets, drapery pockets and valances to be recessed. The varying depth of the recess is revealed at the doorways.



Flexible lighting is easy to install. Sliding-glass panels circle above the living room's built-ins. Routed inside, strings of tiny incandescent lights in flexible tubes create a warm glow.

Like a lighthouse in the middle of the kitchen. A freestanding kitchen workstation (above) helps to break up a large space, shortening the cook's travel time to and from the stove, and creating a book-filled backstop for a sitting area on the other side (near right).

Curved shelves in a rectangular case. Building out one wall in the kitchen to recess the refrigerator and stove created this deep passageway between the dining room and the kitchen (far right). It also created an opportunity for shelves that overhang their casework and sport subtle curves in their leading edges.

that frames the sink window. The light used here, and in the living room mentioned earlier, is called Bend-A-Lite (6292 Windlass Circle, Boynton Beach, FL 33437; 800-235-2201). It is a ½-in. dia. clear-rubber tubing with small incandescent lights inside (photo bottom right, p. 81). It comes in 30-ft. lengths, lists for about $6 per ft. and is rated for 25,000 hours. It is easily run around irregular openings and through ⅝-in. holes drilled in the cabinet walls as a continuous hose of light.

Rule 3: Organize elements by layers or planes, with special attention to edges. All the elements of a building are important, but windows more so because they are our connection to nature. How the window is presented can determine whether people are drawn to it and, ultimately, how much they like the view. In the kitchen shown on p. 80, each window is framed by an arched, beaded proscenium. Contained in the frame are the lights and display shelves. All these things are detailed to give proper space for the window casing and sill. The cabinets on each side reinforce the frame.

Rule 4: When necessary, use built-ins as room dividers. Most kitchens (most homes, in fact) are designed and fabricated on homogenized rules of value and utility, which work okay for the majority of users and are efficient for a factory's production of cabinets (or closet doors or shelving units or whatever). Unfortunately, some-

A built-in headboard becomes a room divider. With integral nightstands, bookshelves and lighting, this headboard makes a cozy spot for curling up with a book. The chamfered curves that frame the opening of the headboard were cut into medium-density fiberboard, which was then painted.

The back of the headboard is a dresser. Outfitted with a mirror and a bank of drawers, the back of the headboard serves as a built-in dresser. Positioned as it is, the headboard also functions as a privacy screen, creating a dressing area between the closets and the rest of the room.

where along the way the poetry evaporates, which is painful to someone for whom objects have meaning.

One of the homogenized rules for kitchens is that except for the occasional peninsula or island, cabinets go against the wall. But the room for the kitchen shown on the facing page was too big, so I used a big kitchen island as a way of breaking down the scale of the room and shortening the walk between stove and sink. As one piece of furniture, this island combines all the basic functions of a working kitchen, except the refrigerator, while adding a significant expanse of bookshelf for the sitting area at the fireplace (photo bottom left, facing page).

Note the upper cabinet's glass doors. All of the glass doors are the same size and lit from above, creating a kind of lighthouse in the middle of the room. Holding the top short of the ceiling helps to make the kitchen ceiling seem just a bit higher. Behind a sliding door at the back of the sink, there is a TV set. Above, there is a framed opening into the sitting area looking onto the fireplace.

On another project, I used the same principle—built-in as room divider—to create a headboard with built-in nightstands, lighting and bookshelves (top photo). Planted in front of the closet and bathroom doors, the headboard also serves as a kind of privacy screen for dressing and on the back side made a place for sock and sweater drawers (inset photo).

Rule 5: Use curves whenever you can. Curves soften life. Straight lines are the easy way out, like those kitchen cabinets that arrive in cardboard boxes; they're the visual equivalent of a dial tone. Curves are liberating.

The prettiest curves are entirely free form. Butterflies in space. Next come ellipses, more prescribed than butterflies, but at least the radii vary. Finally, there are arcs, still head and shoulders above straight lines. Any curve puts life into an edge.

The curve at the bottom of the upper cabinet in the kitchen that's shown on the next page skips over Curves 101 and goes directly to a postgraduate school of arc, thanks to a couple of

When a curve becomes an event. The voluptuous curves across the bottom of this wall cabinet do nothing for its ability to hold dishes, and those curves hardly simplified the cabinet's construction. But they animate the cabinetry in a delightful way. Notice how the muntin design in the cabinet matches that of the window.

twists. First, the radii of the various arcs change as they begin and end, which conveys an intimacy that an arc with constant curvature does not. It guides the eye on a little tour, or dance, slowing down for corners, endings and transitions. It's a mini roller-coaster.

Second, the curve changes direction. At the right side of the cabinet, the curve coming across the face burps a couple of times, then turns 90° and loops back, and then goes down to the plane of the cabinets below, stopping just above the counter's surface. Looking at the counter, your eye sees the curves and also the space defined by the curves. Their interaction creates a three-dimensional event. As I remember, it was hours on the floor of our shop with my pencil and a shrinking eraser before I was satisfied with what I had done.

Rule 6: Exploit muntin patterns to integrate cabinets or simply to animate them.

It's important that the various elements of a design converse with each other. In the kitchen shown above, the pattern of the muntins in the cabinet doors reflects those of the adjacent window. The scale of the upper cabinet is large. The width is more than usual, and the doors are hung on standard brass hinges. All of these style cues complement the age of the house and also help to distinguish this cabinetwork from the stuff that generally arrives at the house in little cardboard boxes.

The cabinets over the desk shown on the facing page continue our long tradition of fooling around with muntin patterns as fretwork. Quite a while ago, I developed a basic approach for thin muntins whereby they are made separately as a complete frame element. The door is made with

a simple rabbeted opening. With the door face down on a bench, the fretwork is laid in place, glass laid on that as one piece and stops applied to hold the sandwich in place. Or in some places—a kitchen, for instance—we'll substitute rotating tabs for the stops (bottom photo) so that the glass can be taken out easily when it's time for cleaning.

Rule 7: Let shelves overlap their casework when appropriate.

On the same built-in desk, the bottoms of the paper cubbies have a separate piece of thin pine that was laid in after the rest had been painted. This shelf laps out over each side of the opening, creating tiny sills. These tiny sills are a kind of whimsical miniversion of something I do whenever possible, which is to let the shelves overlap their casework (photo bottom right, p. 82). Basically, this rule is an excuse for more curves because letting shelves slip their bonds makes it easy to bandsaw a subtle curve to the shelves' leading edges.

Rule 8: Paint almost everything.

By now, you've probably noticed that most of my stuff is painted and usually white. Forms read more clearly when they're painted than when they're left as natural wood, and I've come to appreciate that clarity. In addition, painted work integrates more easily with the walls of a room and is a pleasant foil for the natural materials frequently used for counters and floors.

Rule 9: Integrate everything and think through all the details.

For each of these projects, I started out from the big picture—"we need a kitchen"—and followed the thought down to the tiniest details—"where can I hide the light switches?"—for these items are the dessert. Wherever possible, I integrate all the requirements into one and create a hierarchy of planes to house all the elements, almost as strata in an archaeological dig, or files on your computer's hard drive. I don't always get it right, but I almost always get to try it again. And the second time, I remember that the bullnose on the granite counter should stop short and revert to square just shy of the square-edge commercial range.

The pleasure all of this provides returns twice. The first is private, for me while I draw. The second is public after it is built, and with any luck continues for the life of the house. □

Louis Mackall practices architecture in Guilford, Connecticut, runs an architectural-millwork company called Breakfast Woodworks and drives a 1982 Chrysler New Yorker with mooselike roof racks. Photos by Kevin Ireton.

A wide hallway becomes a home office. This built-in desk illustrates many of the author's "rules." The upper cabinets with their frosted glass and decorative muntins get more attention than the base cabinets. Elegant curves grace the ends of the desk and the apron below the paper cubbies.

Simple stops retain the glass and the decorative muntins. The cabinet doors over the desk are simple frames with a rabbeted inside edge. Both the muntins and the glass are laid into the rabbet and retained by a simple wooden turn button.